

Remarks:

This amendment is submitted in an earnest effort to advance this case to issue without delay. The examiner has not rejected all the claims on art.

The specification has been reworked to better comply with US practice and English usage. No new matter whatsoever has been added. Similarly, a new Abstract has been supplied.

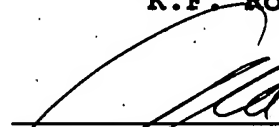
Claim 5 has not been rejected on art. Accordingly this amendment places in the case a new claim 17 that corresponds generally to original claim 5, and that in fact also corresponds to the claims found allowable in the parallel EP case. Nothing in the art suggests such baffle bars for deflecting radiant energy into upper and lower chambers.

In addition method claims 14 and 15 have been combined. Nothing in the US 2,174,079 of Dadson suggests this combined upward/downward deflection of radiant energy combined with on/off switching of resistors to control hating, so amended claim 14 is also allowable.

Thus all the claims are allowable over the cited art. Notice to that effect is earnestly solicited.

If only minor problems that could be corrected by means of a telephone conference stand in the way of allowance of this case, the examiner is invited to call the undersigned to make the necessary corrections.

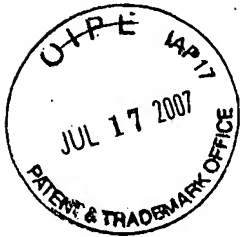
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Enclosure:                      Corrected version  
                                    Substitute Specification  
                                    Substitute Abstract

**ELECTRICAL LY POWERED OVEN , IN PARTICULAR FOR BAKING OR HEATING  
PROCEDURE**



**CROSS REFERENCE TO RELATED APPLICATIONS**

This application is the US national phase of PCT

5 application PCT/EP2002/012055 filed 29 October 2002 with a claim  
to the priority of Italian patent application MI2002A001818  
itself filed 9 August 2002, whose entire contents are herewith  
incorporated by reference.

**FIELD OF THE INVENTION**

10 The present invention relates to an electrically  
powered oven, in particular for baking or heating sliced bread,  
and to a heating procedure.

In particular in the following description, reference  
shall be made to electrically powered ovens, that is, provided  
15 with electrical resistors capable of radiating energy in the form  
of infrared radiation [[s]].

**BACKGROUND OF THE INVENTION**

Ovens of this type comprise a box-shaped [[body]]  
housing provided with electrical heating resistors arranged at  
20 their upper and lower walls. Such ovens of ~~this type~~ define a  
single baking chamber and therefore ~~exhibit a~~ are of very  
restricted capacity. [[[ In fact, such ovens are often very  
small sized).

Moreover, despite the small size, the distance [[of]]  
25 between the upper and lower resistors is too much to allow baking

sliced bread on both faces evenly, quickly and with a low energy consumption.

Multiple baking-chamber ovens have been developed in order to increase the oven capacity and reduce the distance of resistors from the sliced bread.

Such ovens ~~exhibit~~ have an inside intermediate wall which usually delimits two baking chambers reciprocally superimposed.

Moreover, in order to ensure ~~[[a]]~~ good radiance, irradiation and therefore sufficiently quick and even baking or heating, traditional ovens are provided with additional resistors arranged at each of the two faces of the intermediate wall.

However, traditional ovens ~~exhibit~~ have several disadvantages that ~~[[occur]]~~ are apparent both during use and during production manufacture.

In fact in the first case the advantages mainly relate to the high electrical consumption caused by the dual central resistor and to the great difficulty of cleaning the baking chambers, since the resistors ~~housed in the proximity of~~ mounted on the intermediate wall hinder access to ~~[[the]]~~ same and make access to the farthest edges from the access port very difficult.

Moreover, sliced bread must be arranged as close as possible to the resistors to ~~optimise the sliced bread~~ optimize toasting. This implies that in such ovens it is not possible to bake other foodstuff besides slices of bread. In fact, due to the limited distance between the foodstuff to bake and the

resistors, and due to the high temperatures at which the same resistors are brought, traditional ovens are not suitable for baking anything other products than slices of bread.

With [[In]]products that are not sliced bread, in fact,  
5 it is necessary to ~~supply thermal energy~~ heat very slowly so as to optimise thermal diffusion from outer [[most]] to inner most layers regions in order to prevent burning the surface of the foodstuff being baked before heat diffuses inside it for a complete baking of the product, due to the high resistor  
10 temperature.

On the other hand in the second case, the fact of having to ~~apply an~~, provide intermediate wall in [[to]] the oven [[body]] housing and two electrical resistors ~~implies~~ requires several additional treatments manufacturing steps and costs due  
15 to the higher number of elements used.

#### OBJECTS OF THE INVENTION

Therefore, the technical task of the present invention is to realise provide an electrically powered oven, in particular for baking or heating sliced bread, and a heating procedure  
20 thereof, which should allow eliminating the technical disadvantages of the prior art.

Within the scope of this technical purpose, another object of the invention is to realise provide an oven whose electrical consumption should be lower than traditional ovens,  
25 number of baked slices of bread being equal.

Another object of the invention is to realise provide an oven which should be easy to clean in all of its parts, also at ~~the edges that are~~ regions far from the access port.

A further object of the invention is to realise provide  
5 an oven which should be suitable for baking various products, also different from slices of bread, thoroughly and without burning their surfaces.

Last but not least, another object of the invention is to realise provide an oven with restricted reduced manufacturing  
10 costs and time ~~[[s]]~~ compared to is what required with traditional ovens, and which should be capable of baking up to six slices of bread at the same time (six above and six below).

#### SUMMARY OF THE INVENTION

~~The technical task, as well as these and other objects~~  
15 according to the present invention are ~~achieved by realising~~ attained in an electrically powered oven, in particular for baking or heating sliced bread, comprising a box-shaped ~~[[body]]~~ housing inside which there are housed one or more electrical resistors intended to radiate energy into ~~said body~~ the housing  
20 for baking or heating ~~[[said]]~~ the sliced bread. According to the invention , ~~characterized in that~~ at least one resistor is arranged into ~~said body~~ the housing so as to ~~determine~~ define at least two baking chambers and ~~exhibits~~ has baffle means intended to direct ~~[[said]]~~ the radiated energy toward ~~[[said]]~~ the baking  
25 chambers.

Advantageously, the present finding invention also relates to a procedure for heating an electrically powered oven, in particular for baking or heating sliced bread, characterized in that it consists in radiating energy mainly toward the lower portion of ~~[[said]]~~ the oven by at least one resistor, ~~which~~ that is arranged in an intermediate position of the box-shaped ~~[[body]]~~ housing and ~~which determines that defines~~ at least two baking chambers, so that the effect of natural convection into ~~[[said]]~~ the baking chambers is comparable. Moreover, ~~further features of the present invention are defined in the other claims.~~

#### BRIEF DESCRIPTION OF THE DRAWING

Further features and advantages of the invention will appear more clearly from the description of a preferred but non-limiting embodiment of the electrically powered oven, in particular for baking or heating sliced bread, and of the procedure for heating it according to the finding invention, where the oven is shown by way of a non-limiting example in the attached drawings. In such drawings:

~~[[ - ]]~~ figure FIG. 1 shows a perspective view of an oven according to the present finding invention, without a portion of its box-shaped ~~[[body]]~~ housing;

~~[[ - ]]~~ figure FIG. 2 shows an enlarged detail of the baking chambers of the oven according to the finding invention; and

figure FIG. 3 shows an enlarged detail of a support frame and of an electrical resistor of the oven according to the finding invention.

#### SPECIFIC DESCRIPTION

5 With reference to the figures mentioned above, an electrically powered oven, in particular for baking or heating sliced bread, is shown and globally referred to with reference numeral 1. Oven 1 comprises a box-shaped housing 2 (only partly shown) inside which there are housed one or more  
10 electrical resistors 3 intended to radiate energy into the housing 2 to bake or heat sliced bread (not shown).

Advantageously, a resistor 4 is arranged in to-body the housing 2 in an intermediate position between its upper and lower walls so as to determine define at least  
15 two baking chambers 5, 6 ;. Advantageously, resistor 4 exhibits has baffle means 7 adapted to direct the radiated energy toward the baking chambers 5, 6. The baffle means 7 comprises first elongated members 8 arranged at the sides of flanking at least one portion (and in particular, of two portions 20) of  
20 the resistor 4 ;. The two portions 20 of the resistor 4 are reciprocally jointed by other shorter portions 21 and 22 of the same resistor 4.

In the example shown, the two reciprocally parallel portions 20 of resistor 4 are sided at juxtaposed on the two  
25 sides by the elongated members 8. Such first members 8 are connected to a support frame 9 and define seats wherein in which



portions of the resistor 4 are slidably held. In this way, the frame 9 can support the resistor 4, thereby overcoming all problems related to the deformations undergone by the resistor 4 and by the frame 9 itself due to the high temperatures.

5           Advantageously, the support frame 9 allows heat transfer by convection between the two baking chambers 5, 6. In fact, as shown in the attached figures, frame 9 ~~exhibits~~ has a grid-like structure, but in other examples the frame 9 ~~exhibits~~ has a plate-like structure provided with several air passages  
10 between the two baking chambers 5, 6.

Moreover, the support frame 9 ~~exhibits~~ has bars bent upward 10 connected to the first members 8 and portions 11 bent inward, so that the resistor 4 is held between the seats and the bent portions 11 of the frame 9.

15           Moreover, the baffle means 7 also comprises second members 12 adapted to hinder the radiation of radiating energy toward the upper portion of ~~[[body]]~~ housing 2 of oven 1. In particular the second members 12 ~~exhibit~~ have an elongated shape and are arranged above at least one portion of the resistor 4.  
20 In the example shown, each of the two portions at which members 8 are connected is overlapped by an elongated member 12.

In a first embodiment of the oven according to the finding invention (shown in the attached figures), the first and/or second members are ~~realised by~~ constituted as bars  
25 connected to the support frame 9.

In a second embodiment (not shown in the attached figures), the first and/or second members are made of a bent sheet connected to the support frame.

In order to improve the radiance distribution, besides members 12 that partly hinder the energy radiated by the resistor 4 toward the upper portion of the housing 2 of the oven 1, the two short opposed portions 21 and 22 of the resistor 4 remain cold upon switch on. In substance, therefore, heat is only radiated by the portions 20 of the resistor 4, thereby avoiding zones of the slices of bread from being irradiated unevenly. This allows an even baking toasting of the twelve slices of bread, thereby preventing some slices from being more baked than other slices of bread.

The operation of the electrically powered oven in particular for baking or heating sliced bread according to the invention clearly appears from what described and illustrated. In particular, it substantially is as follows~~[[.]]:~~:

In particular, the slices of bread are arranged in the box-shaped housing 2 and the oven is switched on (for example, by setting a timer).

The resistors 3, 4 heat up and start radiating energy into the box-shaped housing 2, which bakes or heats the slices of bread.

Baking is effective since the intermediate resistor 4 irradiates both the upper chamber 5 and the lower chamber 6 at the same time.

Moreover, the same intermediate resistor 4 preferably  
irradiates toward the lower baking chamber 6. [[;]] The lower  
baking chamber 6 therefore tends to heat more than the upper  
baking chamber 5. [[;]] This generates convective motions that  
5 allow a very even heat distribution between the two baking  
chambers which, in [[the]] practice, prevents hot air from  
accumulating in the upper baking chamber.

This allows considerably improving the baking evenness.

Of course, even though reference is always made to the  
10 baking or heating of sliced bread, the oven according to the  
present finding invention can be used for any type of food.

In a preferred embodiment, the oven according to the  
finding invention exhibits has resistor control means adapted to  
repeatedly switch on and off the resistors to prevent their  
15 surface from reaching a sufficiently high temperature, thereby  
generating an intense radiance.

Advantageously, the control means is adapted to detect  
the temperature in [[to]] the oven 1 and switch the resistors 3  
and 4 on or off also in relation with such temperature.

20 The control means comprises, for example, an  
amperometric bimetallic thermostat electrically connected in  
series [[to]] with the resistors, adapted to [[get]] deform  
[[ed]] (switching the resistors on or off) due to the temperature  
inside the oven. Advantageously, such thermostat is also  
25 sensitive to the current absorbed by the resistors 3 and 4. Such  
current produces a further overheating of the thermostat

sensitive member which adds to that of the air heated by the resistors.

In ~~[[the]]~~ practice, therefore, the resistor power supply current contributes to heating the bimetallic thermostat with very quick response times and therefore, very frequent successive switching on and off of the resistors 3 and 4.

In this way the maximum temperature reached by the resistor surface remains limited and the radiance effect is therefore reduced.

The present ~~finding~~ invention also relates to a procedure for heating an electrically powered oven in particular for baking or heating sliced bread.

The procedure consists in radiating energy mainly toward the lower portion of the oven by at least one resistor 4 ~~7~~ which ~~is~~ arranged in an intermediate position of the box-shaped ~~[[body]]~~ housing 2 of oven 1 and which ~~determines~~ defines at least two baking chambers 5, 6, so that the effect of natural convection in ~~[[to]]~~ the baking chambers 5, 6 is comparable.

Advantageously, the procedure according to the present ~~finding~~ invention provides for the repeated switching on and off of the resistors, so as to limit the maximum temperature reached by their surfaces for limiting its radiance.

In ~~[[the]]~~ practice, it has been proved that the electrically powered oven, in particular for baking or heating sliced bread, and the procedure for heating it according to the invention, are especially advantageous since they make possible

allow ~~realising~~ ovens which exhibit have low consumption and require lower production costs compared to traditional ovens.

The electrically powered oven, in particular for baking or heating sliced bread, and the procedure for heating it thus  
5 designed can be subject to several changes and variants, all falling within the scope of the inventive idea; moreover, all details can be replaced with technically equivalent elements.

In [[the]] practice, the materials used as well as the sizes can be of any type according to the requirements and to the  
10 prior art.